11-9-1965

Test 928: Alli-Chalmers 190 (Gasoline)

Tractor Museum

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### POWER TAKE-OFF PERFORMANCE

<table>
<thead>
<tr>
<th>Hp</th>
<th>Crankshaft speed rpm</th>
<th>Fuel Consumption</th>
<th>Temperature Degrees F</th>
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**Maximum Power and Fuel Consumption**

- Rated Engine Speed—Two Hours: 75.37, 2200 mph
- Standard Power Take-off Speed (540 rpm)—One Hour: 70.18, 1938 mph

**Varying Power and Fuel Consumption**

<table>
<thead>
<tr>
<th>Rated</th>
<th>Standard</th>
<th>Pull</th>
<th>Gear</th>
<th>Horsepower</th>
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### Varying Drawbar Performance

<table>
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<tr>
<th>Drawbar</th>
<th>Speed</th>
<th>Crankshaft rpm</th>
<th>Slip of drivers</th>
<th>Fuel Consumption</th>
<th>Temp Degrees F</th>
<th>Barometer inches of Mercury</th>
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### Drawbar Performance

- Maximum Available Power—Two Hours—4th Gear: 63.10, 5477 lbs
- Maximum Available Power—Ten Hours—4th Gear: 50.84, 4190 lbs
- Maximum Available Power—Two Hours—4th Gear: 36.12, 2802 lbs

### Maximum Power with Ballast

- 62.78, 8753 lbs, 4.3 mph
- 65.65, 7094 lbs, 4.1 mph
- 65.69, 5666 lbs, 4.3 mph
- 65.39, 4892 lbs, 5.1 mph
- 65.51, 3915 lbs, 6.2 mph
- 65.48, 2451 lbs, 9.7 mph
- 59.60, 1605 lbs, 13.9 mph

### Maximum Power without Ballast

- 58.24, 5312 lbs, 4.9 mph

### Drawbar and Travel Speed with Ballast—4th Gear

- Pounds pull: 5666 lbs
- Horspower: 65.09 HP
- Crankshaft speed, rpm: 2196
- Miles per hour: 4.3 mph
- Slip of drivers, %: 6.93

### Tires, Ballast and Weight

- **With Ballast**
- **Without Ballast**

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<th>Ballast</th>
<th>Weight</th>
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The University of Nebraska Agricultural Experiment Station
E. F. Frolik, Dean; H. H. Kramer, Director, Lincoln, Nebraska

Department of Agricultural Engineering

**Dates of Test:** NOVEMBER 9 TO NOVEMBER 16, 1965

**Manufacturer:** ALLIS-CHALMERS MANUFACTURING COMPANY, MILWAUKEE, WISCONSIN

**FUEL, OIL and TIME**

Fuel regular gasoline Octane No Motor 85.2 Research 92.3 (rating taken from oil company's typical inspection data) Specific gravity converted to 60°/60° SAE 10W-30 API service classification MS, DM To motor 1.927 gal Drained from motor 1.523 gal Transmission and final-drive lubricant E.P. 80 Total time engine was operated 40 hours.

**ENGINE MAKE**

Allis-Chalmers gasoline Type 6 cylinder vertical Serial No 26-09002 Crankshaft mounted lengthwise Rated rpm 2200 Bore and stroke 3½" x 4" Compression ratio 8.0 to 1 Displacement 265 cu μ Ignition system battery Cranking system 12 volt electric Lubrication pressure Air cleaner dry type with replaceable pleated paper element Oil filter replaceable pleated paper cartridge Fuel filter sediment bowls with screens Muffler was used Cooling medium temperature control thermostat.

**CHASSIS TYPE**

Standard Serial No 190 6955 Tread width rear 64" to 80" front 60" to 84" Wheel base 105¾" Center of gravity (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheel 31.6" Vertical distance above roadway 39.4" Horizontal distance from center of rear wheel to road 6" to the right/left Hydraulic control system direct engine drive Transmission selective gear fixed ratio with operator controlled partial range power shifting Advertised speeds mph first 2.1 second 3.0 third 3.6 fourth 4.4 fifth 5.1 sixth 6.3 seventh 9.6 eighth 13.6 reverse 2.8 and 3.9 Clutch single plated dry disc operated by foot pedal Brakes contracting band and disc operated by two foot pedals which can be locked Steering hydraulic with power assist Turning radius (on concrete surface with brake applied) right 133" left 133" (on concrete surface without brake) right 150" left 156" Turning space diameter (on concrete surface with brake applied) right 281" left 281" (on concrete surface without brake) right 300" left 300" Belt pulley 1845 rpm at 2200 engine rpm diam 9" face 6/8" Belt speed 3417 rpm Power take-off 540 rpm at 1937 engine rpm.

**REPAIRS and ADJUSTMENTS**

No repairs or adjustments.

**REMARKS**

All test results were determined from observed data obtained in accordance with the SAE and ASAE test code.

First gear was not run as it was necessary to limit the pull in second gear to avoid excessive wheel slippage.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 928.

L. F. Larsen

Engineer-in-Charge

G. W. Steinbruegger, Chairman
J. J. Sulek
D. E. Lane

Board of Tractor Test Engineers
GENERAL CONDITIONS

Each tractor is a production model equipped for common usage. Power consuming accessories can be disconnected only when it is convenient for the operator to do so in practice. Additional weight can be added as ballast if the manufacturer regularly supplies it for sale. The static tire loads and the inflation pressures must conform to recommendations in the Tire Standards published by the Society of Automotive Engineers.

PREPARATION FOR PERFORMANCE RUNS

The engine crankcase is drained and refilled with a measured amount of new oil conforming to specifications in the operators manual. The fuel used and the maintenance operations must also conform to the published information delivered with the tractor. The tractor is then limbered-up for 12 hours on drawbar work in accordance with the manufacturer's published recommendations. The manufacturer's representative is present to make appropriate decisions regarding mechanical adjustments.

The tractor is equipped with approximately the amount of added ballast that is used during maximum drawbar tests. The tire tread-bar height must be at least 65% of new tread height prior to the maximum power run.

BELT OR POWER TAKE-OFF PERFORMANCE

Maximum Power and Fuel Consumption. The manufacturer's representative makes carburetor, fuel pump, ignition and governor control settings which remain unchanged throughout all subsequent runs. The governor and the manually operated governor control lever is set to provide the high-idle speed specified by the manufacturer for maximum power. Maximum power is measured by connecting the belt pulley or the power take-off to a dynamometer. The dynamometer load is then gradually increased until the engine is operating at the rated speed specified by the manufacturer for maximum power. The corresponding fuel consumption is measured.

Varying Power and Fuel Consumption. Six different horsepower levels are used to show corresponding fuel consumption rates and how the governor causes the engine to react to the following changes in dynamometer load: 85% of the dynamometer torque at maximum power; minimum dynamometer torque, ¼ of the 85% torque; maximum power, ¼ and ½ of the 85% torque. Since a tractor is generally subjected to varying loads the average of the results in this test serve well for predicting the fuel consumption of a tractor in general usage.

DRAWBAR PERFORMANCE

All engine adjustments are the same as those used in the belt or power take-off tests. If the manufacturer specifies a different rated crankshaft speed for drawbar operations, then the position of the manually operated governor control is changed to provide the high-idle speed specified by the manufacturer in the operating instructions.

Varying Power and Fuel Consumption With Ballast. The varying power runs are made to show the effect of speed-control devices (engine, governor, automatic transmission, etc.) on horsepower, speed and fuel consumption. These runs are made around the entire test course which has two 180 degree turns with a minimum radius of 50 feet. The drawbar pull is set at 3 different levels as follows; (1) as near to the pull at maximum power as possible and still have the tractor maintain the travel speed at maximum horsepower on the straight sections of the test course; (2) 75% of the pull at maximum power; and (3) 50% of the pull at maximum power. Prior to 1958, fuel consumption data (10 hour test) were shown only for the pull obtained at maximum power for tractors having torque converters and at 75% of the pull obtained at maximum power for gear-type tractors.

Maximum Power with Ballast. Maximum power is measured on straight level sections of the test course. Data are shown for not more than 12 different gears or travel speeds. Some gears or travel speeds may be omitted because of high slippage of the traction members or because the travel speed may exceed the safe-limit for the test course. The maximum safe speed for the Nebraska Test Course has been set at 15 miles per hour. The slippage limits have been set at 15% and 7% for pneumatic tires and steel tracks or lugs, respectively. Higher slippage gives widely varying results.

Maximum Power Without Ballast. All added ballast is removed from the tractor. The maximum drawbar power of the tractor is determined by the same procedure used for getting maximum power with ballast. The gear (or travel speed) is the same as that used in the 10-hour test.

Varying Power and Travel Speed with Ballast. Travel speeds corresponding to drawbar pulls beyond the maximum power range are obtained to show the "lugging ability" of the tractor. The run starts with the pull at maximum power; then additional drawbar pull is applied to cause decreasing speeds. The run is ended by one of three conditions: (1) maximum pull is obtained, (2) the maximum slippage limit is reached, or (3) some other operating limit is reached.

For additional information about the Nebraska Tractor Tests write to the Department of Agricultural Engineering, University of Nebraska, Lincoln, Nebraska.